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| **Sir Harry Smith Community College Curriculum Map SUBJECT: Science YEAR 8**  |
| Curriculum Intent: ***To provide a knowledge rich, spiral curriculum through inclusive science lessons that fit and expand our learner’s context in an environment that builds resilience*** |
| **School Values** | **Curriculum Focus** | **Term 1** | **Term 2**  | **Term 3**  |
| **High Quality Learning Experience** | **Key Vocabulary** | **How Science Works***Hypothesis, variable, line of best fit, data, audience, evidence, peer review, bias, benefit, reasoning, model, theory, argumentation***Forces***Contact, non-contact, newton, Hookes’ law, deformation, pivot, moment, pressure, fluid, upthrust, stress***Matter***Element, atom, compound, molecule, formula, polymer, synthetic, periodic table, alkali metals, halogens, noble gases, inert***Organisms***Gas exchange, respiration, diaphragm, drug, alcohol, passive smoking, depressant, stimulant, nutrient, digestion, villi, bacteria, enzyme* | **Electromagnets***Magnet, field, pole, solenoid, magnetise, circuit breaker, loudspeaker***Energy***Work, deform, lever, thermal store, thermometer, conduction, convection, radiation, insulator***Reactions***Reactant, product, conserved, combustion, fuel, thermal decomposition, conservation, endothermic, exothermic, chemical bond***Ecosystems**Aerobic, anaerobic, respiration, oxygen debt, fermentation, biotechnology, photosynthesis, chlorophyll, stomata, nitrates, phosphates, fertiliser | **Waves***Compression, rarefaction, longitudinal, transverse, electromagnetic spectrum, radiation, transmission, superimpose***Earth***Atmosphere, greenhouse effect, climate change, carbon cycle, natural resources, ore, recycling***Genes***Evolution, fossil, natural selection, peer review, extinction, competition, survival, endangered, conservation, inherited, characteristics, DNA, genes, alleles, dominant, recessive, genetic modification* |

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| **Pursuit of Excellence** | **Substantive Knowledge****COMPOSITES** | Use data and evidence to inform theoryLink forces to pressureHave a working knowledge that the periodic table is an organised picture of the elements based on propertiesExplain what the human body requires to stay healthy | Explain the behaviour of magnets and how they can be used to generate electricityUse knowledge of energy to reduce transfersBonds are broken and made in a chemical reactionDescribe how plants and animals get the energy they need to grow and develop | Compare transverse and longitudinal wavesHuman activity affects the earthThe way animals and plants look now is based on random mutations |
| **Substantive Knowledge****COMPONENTS***(Examples, this is not an exhaustive list)* | Decide on data to be collected based on independent and dependant variablesForces can deform objects through compression or tensionThe turning force around a pivot is called moment and the further from the pivot a force is applied the greater the momentDefine element, mixture, and compoundCount the number of atoms of an element in a chemical formulaThe percentage of oxygen we exhale is less than we inhale, and the percentage of CO2 increases in exhaled airDescribe enzymes as special proteins that break down molecules | Describe how magnetic field lines tell you about direction and strength of the magnetic fieldDescribe how to make an electromagnetWork is a calculation to show how much energy has been transferred and it equals force x distanceMovement of particles transfers thermal energy in objectsThe number of atoms on each side of a chemical equation must be the sameMolecules can broken down using heat. This is thermal decomposition.Compare aerobic and anaerobic respiration.Describe how plants use minerals for healthy growth and explain why we use fertilisers. | Describe a sound wave as a series of compressions and rarefactions caused by a vibrationDraw and label a transverse wave with wavelength, amplitude, peak and troughThe greenhouse effect keeps the earth warm when gases absorb radiationReactivity determines how we decide which method to use to extract a metalDescribe the theory of natural selectionExplain how factors can lead to the extinction of a speciesDescribe the relationship between DNA, genes and chromosomes |
| **Disciplinary Practices** | Research using a range of media such as articles, websites, and booksDraw tables correctly for data collection during practical activitiesWrite a method to investigate a hypothesisSelect the correct format for presenting dataEvaluate methods and models and suggest improvementsRearrange formulae to calculate quantities such as mass, weight, and speedUse data to support or disprove a theoryUse keywords in context to explain scientific phenomena through extended writing tasksDraw conclusions from evidence |
| **Extending the boundaries of learning** | **Cultural Capital and beyond the curriculum** | Links to scientific careers and the opportunity to speak to people working in the sectorScience clubGuest speakers and workshops |
| **Achievement** | **Assessment** | Assessment is carried out continuously during modules using an online formative platform.Summative assessment is carried out twice during the academic yearStudents complete 10 progress tasks throughout the year which challenges their scientific literacy and formatively assesses their understanding.  |
| **Valuing People** | **How our curriculum meets the needs of every individual** | Threshold concepts are identified for all topics.High expectations are set for all students that they will reach these concepts. When necessary, investigations and tasks are adapted to provide access to course content or to extend learning. |